```
FILE 'REGISTRY' ENTERED AT 10:34:22 ON 21 JUN 2002

=> S VANADIUM HALOPEROXIDASE/CN
L1            0 VANADIUM HALOPEROXIDASE/CN

=> S VANADIUM HALOPEROXIDASE
          58178 VANADIUM
             13 HALOPEROXIDASE
L2            0 VANADIUM HALOPEROXIDASE
                  (VANADIUM(W)HALOPEROXIDASE)

=> S VANADIUM PEROXIDASE/CN
L3            0 VANADIUM PEROXIDASE/CN

=> S VANADIUM PEROXIDASE
          58178 VANADIUM
           2087 PEROXIDASE
L4            0 VANADIUM PEROXIDASE
                  (VANADIUM(W)PEROXIDASE)

=> S PEROXIDASE
L5         2087 PEROXIDASE

=> S PEROXIDASE/CN
L6            1 PEROXIDASE/CN

=> D

L6   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   9003-99-0  REGISTRY
CN     ***Peroxidase (9CI)***    (CA INDEX NAME)
OTHER NAMES:
CN   Baylase RP
CN   Coniferyl alcohol peroxidase
CN   E.C. 1.11.1.7
CN   Enzylon OL 50
CN   Eosinophil peroxidase
CN   Extensin peroxidase
CN   Guaiacol peroxidase
CN   Guaiacolase
CN   Heme peroxidase
CN   Lactoperoxidase
CN   Manganese-dependent peroxidase
CN   Mn-dependent peroxidase
CN   MPO
CN   Myeloperoxidase
CN   Novozym 502
CN   Oxyperoxidase
CN   PEO-131
CN   Peroxidase 51004
CN   Protoheme peroxidase
CN   Pyrocatechol peroxidase
CN   Pyrogallol peroxidase
CN   Scavengase p20
CN   Scopoletin peroxidase
CN   SP 502
CN   Thiocyanate peroxidase
CN   Thiol peroxidase
CN   Verdoperoxidase
DR   9013-92-7, 9039-19-4, 191289-36-8
MF   Unspecified
CI   COM, MAN
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO,
       CA, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN,
       CSCHEM, CSNB, DDFU, DRUGU, EMBASE, IFICDB, IFIPAT, IFIUDB, IPA,
       MSDS-OHS, NAPRALERT, NIOSHTIC, PIRA, PROMT, TOXCENTER, ULIDAT, USPAT2,
       USPATFULL
     Other Sources:   EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
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    28236 REFERENCES IN FILE CA (1967 TO DATE)
     2029 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
    28282 REFERENCES IN FILE CAPLUS (1967 TO DATE)

FILE 'CAPLUS' ENTERED AT 10:35:51 ON 21 JUN 2002

=> S L6;S VANADIUM PEROXIDASE;S FUCUS;S DISTICHUS;S DIANISIDINE;S ODA
L7       28283 L6


        119611 VANADIUM
            28 VANADIUMS
        119616 VANADIUM
                 (VANADIUM OR VANADIUMS)
         62166 PEROXIDASE
          5790 PEROXIDASES
         63161 PEROXIDASE
                 (PEROXIDASE OR PEROXIDASES)
L8           6 VANADIUM PEROXIDASE
                 (VANADIUM(W)PEROXIDASE)


         1308 FUCUS
            1 FUCUSES
           13 FUCI
L9       1321 FUCUS
                 (FUCUS OR FUCUSES OR FUCI)


L10       101 DISTICHUS


         1993 DIANISIDINE
            8 DIANISIDINES
L11      1999 DIANISIDINE
                 (DIANISIDINE OR DIANISIDINES)


          983 ODA
           11 ODAS
L12       992 ODA
                 (ODA OR ODAS)

=> S L8 AND L9
L13          0 L8 AND L9

=> S PEROXIDASE
         62166 PEROXIDASE
          5790 PEROXIDASES
L14      63161 PEROXIDASE
                 (PEROXIDASE OR PEROXIDASES)

=> S L7 OR L14
L15      66853 L7 OR L14

=> S L15 AND L9
L16         17 L15 AND L9

=> S L16 NOT L8
L17         17 L16 NOT L8

=> D L8 1-6 CBIB ABS;D L17 1-17 CBIB ABS

L8   ANSWER 1 OF 6  CAPLUS  COPYRIGHT 2002 ACS
2000:487881   Document No. 133:204508  Biocatalytic and biomimetic oxidations
     with vanadium.  Van de Velde, Fred; Arends, Isabel W. C. E.; Sheldon,
     Roger A. (Laboratory of Organic Chemistry and Catalysis, Delft University
     of Technology, Delft, 2628 BL, Neth.).  Journal of Inorganic Biochemistry,
     80(1-2), 81-89 (English) 2000.  CODEN: JIBIDJ.  ISSN: 0162-0134.
     Publisher: Elsevier Science Inc..
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AB A review with 70 refs. Approaches to the rational design of vanadium-based semi-synthetic enzymes and biomimetic models as catalysts for enantioselective oxidns. are reviewed. Incorporation of vanadate ion into the active site of phytase (E.C. 3.1.3.8), which in vivo mediates the hydrolysis of phosphate esters, afforded a semi-synthetic peroxidase. It catalyzed the enantioselective oxidn. of prochiral sulfides with H2O2 affording the S-sulfoxide, e.g. in 66% ee at quant. conversion of thioanisole. Under the reaction conditions the semi-synthetic ***vanadium*** ***peroxidase*** was stable for more than 3 days with only a slight decrease in turnover frequency. Amongst the transition-metal oxoanions that are known to be potent inhibitors of phosphatases, only vanadate resulted in a semi-synthetic peroxidase when incorporated into phytase. In a biomimetic approach, vanadium complexes of chiral Schiff base complexes were encapsulated in the super cages of a hydrophobic zeolite Y. Unfortunately, these ship-in-a-bottle complexes afforded only racemic sulfoxide in the catalytic oxidn. of thioanisole with H2O2.

L8 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2002 ACS

2000:5329 Document No. 132:162729 The rational design of semisynthetic peroxidases. Van de Velde, Fred; Konemann, Lars; Van Rantwijk, Fred; Sheldon, Roger A. (Laboratory of Organic Chemistry and Catalysis, Delft University of Technology, Delft, 2628 BL, Neth.). Biotechnology and Bioengineering, 67(1), 87-96 (English) 2000. CODEN: BIBIAU. ISSN: 0006-3592. Publisher: John Wiley & Sons, Inc..

AB A semisynthetic peroxidase was designed by exploiting the structural similarity of the active sites of vanadium dependent haloperoxidases and acid phosphatases. Incorporation of vanadate ion into the active site of phytase (E.C. 3.1.3.8), which mediates in vivo the hydrolysis of phosphate esters, leads to the formation of a semisynthetic peroxidase, which catalyzes the enantioselective oxidn. of prochiral sulfides with H2O2 affording the S-sulfoxide, e.g. in 66% ee at 100% conversion for thioanisole. Under reaction conditions the semisynthetic ***vanadium*** ***peroxidase*** is stable for over 3 days with only a slight decrease in turnover frequency. Polar water-miscible cosolvents, such as methanol, dioxane, and dimethoxyethane, can be used in concns. of 30% (vol./vol.) at a small penalty in activity and enantioselectivity. Among the transition metal oxoanions that are known to be potent inhibitors, only vanadate resulted in a semisynthetic peroxidase when incorporated into phytase. A no. of other acid phosphatases and hydrolases were tested for peroxidase activity, when incorporated with vanadate ion. Phytases from Aspergillus ficuum, A. fumigatus, and A. nidulans, sulfatase from Helix pomatia, and phospholipase D from cabbage catalyzed enantioselective oxygen transfer reactions when incorporated with vanadium. However, phytase from A. ficuum was unique in also catalyzing the enantioselective sulfoxidn., albeit at a lower rate, in the absence of vanadate ion.

L8 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2002 ACS

1997:199652 Document No. 126:289945 From phosphatases to ***vanadium*** ***peroxidases*** : a similar architecture of the active site. Hemrika, Wieger; Renirie, Rokus; Dekker, Henk L.; Barnett, Phil; Wever, Ron (E. C. Slater Institute, Amsterdam, 1018, Neth.). Proc. Natl. Acad. Sci. U. S. A., 94(6), 2145-2149 (English) 1997. CODEN: PNASA6. ISSN: 0027-8424. Publisher: National Academy of Sciences.

AB We show here that the amino acid residues contributing to the active sites of the vanadate contg. haloperoxidases are conserved within three families of acid phosphatases; this suggests that the active sites of these enzymes are very similar. This is confirmed by activity measurements showing that apochloroperoxidase exhibits phosphatase activity. These observations not only reveal interesting evolutionary relationships between these groups of enzymes but may also have important implications for the research on acid phosphatases, esp. glucose-6-phosphatase - the enzyme affected in von Gierke disease-of which the predicted membrane topol. may have to be reconsidered.

L8 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2002 ACS

1995:795936 Document No. 123:192067 Inhibition and inactivation of vanadium bromoperoxidase by the substrate hydrogen peroxide and further mechanistic studies. Soedjak, Helena S.; Walker, J. V.; Butler, Alison (Department of Chemistry, University of California, Santa Barbara, CA, 93106-9510, USA). Biochemistry, 34(39), 12689-96 (English) 1995. CODEN: BICHAW. ISSN:

0006-2960.

AB H2O2, a substrate of V-contg. bromoperoxidase (V-BrPO), is shown to be a noncompetitive inhibitor of the enzyme from Ascophyllum nodosum. V-BrPO inhibition by H2O2 increased with increasing pH. The inhibition was reversible under the conditions of the initial steady-state kinetic expts. Anal. of Ki (KiiH2O2, KisH2O2) vs. H+ concn. indicated that an ionizable group with a pKa of 6.5-7 was involved in the inhibition. The origin of the O atoms in the O2 produced by the V-BrPO-catalyzed bromide-assisted disproportionation of H2O2 was shown through H218O2 labeling expts. to originate from the same mol. of H2O2. V-BrPO-catalyzed bromination was shown to be an electrophilic (Br+) as opposed to a radical (Br.bul.) process. The stoichiometry of H2O2 consumed to monochlorodimedone (MCD) reacted or to O2 produced was reported. The concn. of H2O2 also affected the competition of O2 formation during MCD bromination; competitive O2 formation was strongly enhanced at high pH. Turnover of V-BrPO under conditions of very high H2O2 concn. led to irreversible inactivation at pH 4 and 5. Much less inactivation occurred during turnover at long reaction times at higher pH (pH >6), and the inactivation could be fully reversed by treatment with vanadate.

L8 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2002 ACS

1991:444997 Document No. 115:44997 Biohalogenation as a source of halogenated ansioles in air. Walter, B.; Ballschmiter, K. (Dep. Anal. Environ. Chem., Univ. Ulm, Ulm, D-7900, Fed. Rep. Ger.). Chemosphere, 22(5-6), 557-67 (English) 1991. CODEN: CMSHAF. ISSN: 0045-6535.

AB Marine algae are known to contain haloperoxidases which are able to halogenate org. substrates in the presence of chloride or bromide and H2O2. It was tested whether this mechanism of enzymic halogenation could explain the occurrence of chlorinated and brominated ansioles which have been detected in air over the Atlantic and Indian Oceans. Chloroperoxidase, lactoperoxidase, horseradish peroxidase, and ***vanadium*** - ***peroxidase*** were used as enzymes and Ph Me ester (ansiole) as the substrate. The mono- to trichloro- and mono- to tribromoansioles formed were analyzed by capillary gas chromatog. and electron capture detection (HRGC/ECD). Only chloroperoxidase formed both chloro- and bromoansioles.

L8 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2002 ACS

1989:36099 Document No. 110:36099 The first crystallization of a vanadium-dependent peroxidase. Mueller-Fahrnow, A.; Hinrichs, W.; Saenger, W.; Vilter, H. (Inst. Kristallogr., Freie Univ. Berlin, Berlin, D-1000/33, Fed. Rep. Ger.). FEBS Lett., 239(2), 292-4 (English) 1988. CODEN: FEBLAL. ISSN: 0014-5793.

AB Single crystals of a V-contg. peroxidase from the brown alga Ascophyllum nodosum were grown by the vapor diffusion technique using polyethylene glycol 6000 along with NaCl as precipitant. The crystals belong to the monclinic space group P21. X-ray diffraction extends to at least 2.4 .ANG.. The cell dimensions (a = 173.0, b = 164.9, c = 68.5 .ANG., .beta. = 94.5.degree.) indicate that there are 4 mols. of 100 kDa per asym. unit, suggesting that the native enzyme might occur as a tetramer.

L17 ANSWER 1 OF 17 CAPLUS COPYRIGHT 2002 ACS

1999:186817 Document No. 131:28719 Reactive oxygen metabolism in intertidal ***Fucus*** spp. (Phaeophyceae). Collen, Jonas; Davison, Ian R. (School of Marine Sciences, University of Maine, Orono, ME, 04469-5722, USA). Journal of Phycology, 35(1), 62-69 (English) 1999. CODEN: JPYLAJ. ISSN: 0022-3646. Publisher: Phycological Society of America.

AB Our previous research suggests that interspecific variation in stress tolerance in intertidal ***Fucus*** spp. (Phaeophyceae) is partially mediated by differences in the prodn. of, or ability to detoxify, reactive oxygen. Here we report on the content of antioxidants (ascorbate, glutathione, carotenoids, and tocopherols) and protective enzymes (catalase, superoxide dismutase, ascorbate ***peroxidase*** , and glutathione reductase) involved in reactive oxygen metab. in three species of intertidal brown algae- ***Fucus*** spiralis L., F. evanescens C. Ag., and F. distichus L.-that differ in stress tolerance and position in the intertidal zone. Contents of the major antioxidants were similar in the three species and were not correlated with stress tolerance. The

least stress tolerant species, F. distichus, had the lowest activity of reactive-oxygen-scavenging enzymes, although F. spiralis, the species with the highest stress tolerance, and F. evanescens contained similar activities of antioxidant enzymes on a fresh-wt. basis. However, the activities of superoxide dismutase and ascorbate ***peroxidase*** in F. evanescens are lower than those of F. spiralis when expressed on the basis of chlorophyll. These data show that the ratio between reactive oxygen protection and prodn. might be more important than the abs. content of antioxidants and protective enzymes. It also shows the importance of localization of detoxifying mechanisms and avoidance of oxidative stress.

L17 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2002 ACS
1998:664595 Document No. 130:11418 Role of algae in fate of carcinogenic polycyclic aromatic hydrocarbons in the aquatic environment. Kirso, U.; Irha, N. (Environmental Chemistry Group, Institute of Chemical Physics and Biophysics, Tallinn, EE0026, Estonia). Ecotoxicology and Environmental Safety, 41(1), 83-89 (English) 1998. CODEN: EESADV. ISSN: 0147-6513. Publisher: Academic Press.
AB Polycyclic arom. hydrocarbons (PAHs) represent an ecotoxicol. relevant, combustion-related substance group. The bioconcn. and transformation of a priority PAH, benzo[a]pyrene (BaP), by brown (***Fucus*** vesiculosus and Chorda filum), red (Furcellaria lumbricalis), green (Enteromorpha intestinalis, and Cladophora glomerata), and chara (Chara aspera) algae have been studied. A flux budget was made of the amts. of BaP that are accumulated and metabolized by different algae during an estd. time. The results indicated that of all the BaP consumed, 89-99% was found in the biomass of ***Fucus*** , an insignificant part was in the soln., and the remainder (up to 4%) was not recovered, i.e., was considered to have been metabolized. For green and chara algae, the proportion of transformed PAHs was more essential, 42-49%. The transformation of BaP in marine and freshwater algae is species specific and depends on the presence and activity of enzymes localized in the plant cells. The most important enzyme systems for detoxification of BaP are o-diphenol oxidase, cytochrome P 450, and ***peroxidase*** . The data indicate the important role of marine and freshwater algae in the fate of carcinogenic PAHs in the environment. (c) 1998 Academic Press.

L17 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2002 ACS
1997:278967 Document No. 126:248564 Analytical element and method for the determination of a specific binding ligand using a vanadium bromoperoxidase as a signal-generating enzyme. Friedman, Alan Eric; Kissel, Thomas Robert; Groulx, Sarah Fingar; Kopcienski, Martha Miller (Johnson & Johnson Clinical Diagnostics, Inc., USA). PCT Int. Appl. WO 9709619 A1 19970313, 42 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US13270 19960816. PRIORITY: US 1995-523042 19950901.
AB An anal. element can be used to sensitively and rapidly detect a wide variety of specific binding ligands in either a competitive or sandwich assay format. The assays are carried out using a vanadium bromoperoxidase-labeled immunoreactant and a chemiluminescent signal-providing wash compn. which comprises a 2,3-dihydro-1,4-phthalazinedione deriv.; a halogen, pseudohalogen, halogen-providing source, or pseudohalogen-providing source; and a peroxide or a peroxide-generating reagent compn.

L17 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2002 ACS
1997:181470 Document No. 126:196196 Biochemical responses of the marine macroalgae Ulva lactuca and ***Fucus*** vesiculosus to cadmium and copper - from sequestration to oxidative stress. Jervis, Les; Rees-Naesborg, Rikke; Brown, Murray (Marine Ecotoxicol. Group, Univ. Plymouth, Plymouth, PL4 8AA, UK). Biochemical Society Transactions, 25(1), 63S (English) 1997. CODEN: BCSTB5. ISSN: 0300-5127. Publisher: Portland Press.
AB Phytochelatin-like material formation by F. vesiculosus in response to cadmium was reported. Copper increased prodn. of glutathione ***peroxidase*** by U. lactuca.

L17 ANSWER 5 OF 17 CAPLUS COPYRIGHT 2002 ACS
1996:377466 Document No. 125:88645 Aqueous water-resistant phloroglucinol-type adhesives and glues derived and extracted from algae and activated by oxidizing agents. Vreeland, Valerie; Grotkopp, Eva (University of California, USA). U.S. US 5520727 A 19960528, 20 pp. (English). CODEN: USXXAM. APPLICATION: US 1993-108077 19930816.

AB Aq. water-resistant phenolic-type adhesives or glues, contg. 2-500,000 phloroglucinol units, are extd. from algae (esp. brown and red algae, with solns. of lower alcs. and acetone), and activated in the presence of an inorg. oxidizing agent, org. peroxides, or a naturally derived enzyme (esp. ***peroxidases*** and haloperoxidases). Such aq. adhesives and glues are crosslinked with algal carbohydrates, algal fibers, and algal proteins. These phenolic compds. act as an adhesive glue by binding non-specifically to both hydrophobic and hydrophilic surfaces under aq. conditions and are useful for medical, biol., biomedical, marine, industrial, and other applications.

L17 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2002 ACS
1985:59359 Document No. 102:59359 A preliminary investigation of the electrophoretic characteristics of enzymes from a range of macroscopic brown algae. Marsden, W. J. N.; Callow, J. A.; Evans, L. V. (Dep. Plant Sci., Univ. Leeds, Leeds, LS2 9JT, UK). Bot. Mar., 27(11), 521-6 (English) 1984. CODEN: BOTNA7. ISSN: 0006-8055.

AB Electrophoretic techniques were used to compare active enzyme prepns. of 5 members of the Fucales and 4 members of the Laminariales. Plants of each species were surveyed for acid and alk. phosphatases, .alpha.-.beta.-esterases, leucine aminopeptidases, and ***peroxidases*** (with pyrogallol, KI, or o-tolidine as H donors). Enzyme patterns differ between the Fucales and Laminariales as well as within the 2 orders, but similar patterns were obsd. in ***Fucus*** species and also in Laminaria species. With improvements in techniques, electrophoretic characteristics of isoenzymes should aid in the identification and classification of members of the Phaeophyceae, in particular when morphol. characters are inadequate and in the case of putative hybrids.

L17 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2002 ACS
1984:171701 Document No. 100:171701 A preliminary electrophoretic comparison of ***Fucus*** serratus and ***Fucus*** vesiculosus. Marsden, W. J. N.; Evans, L. V.; Callow, J. A.; Keen, J. N. (Dep. Plant Sci., Univ. Leeds, Leeds, LS2 9JT, UK). Bot. Mar., 27(2), 79-83 (English) 1984. CODEN: BOTNA7. ISSN: 0006-8055.

AB Electrophoretic techniques were used to assess the degree of genetic differentiation among 2 ***Fucus*** species: F. serratus and F. vesiculosus. One population of each species was surveyed for 7 enzymes. Crit. examn. of the methods of detecting enzyme polymorphisms by electrophoresis showed that the value of the techniques as used in this study is limited in the case of ***Fucus*** . This was due firstly to tech. limitations: because of low enzyme activities it was necessary to use heavily loaded rods of polyacrylamide and these required long strain incubation times, which allowed band diffusion. In addn., some masking of isoenzyme mobility by slight variation in gel compn. occurred. Secondly, in this study, no enzyme polymorphism on which to base allele frequencies was unequivocally detected in populations of F. serratus and F. vesiculosus. Improvements in the techniques are outlined.

L17 ANSWER 8 OF 17 CAPLUS COPYRIGHT 2002 ACS
1983:607824 Document No. 99:207824 Oxidation of benzo[a]pyrene by plant enzymes. Kirso, U.; Belykh, L.; Stom, D.; Irha, N.; Urbas, E. (Inst. Chem., 200026, USSR). Polynucl. Aromat. Hydrocarbons, Int. Symp., 7th, Meeting Date 1982, 679-87. Editor(s): Cooke, Marcus; Dennis, Anthony J. Battelle Press: Columbus, Ohio. (English) 1983. CODEN: 50NNAZ.

AB In exptl. tanks benzo[a]pyrene (I) [50-32-8] was accumulated by algae, particularly the brown algae ***Fucus*** which accumulated 89-99% of the initial amt. Green algae accumulated considerably less I; Chara, Cladophora, and Enteromorpha accumulated 64.5, 48.1, and 29.3% of the initial I concn., resp. The algae metabolized I in the following order ***Fucus*** < Cladophora < Chara < Enteromorpha. I diols, quinones, and phenols and other polycyclic arom. hydrocarbons, were found in the crushed cells of Enteromorpha and Chara. I was oxidized in the presence of ***peroxidase*** [***9003-99-0***] plus H2O2, H2O2 alone, or phenol

oxidase [9002-10-2]. The reactions followed mixed or zero order kinetics. The main factor in selfpurifn. of water from polycyclic arom. hydrocarbons is accumulation not autoxidn.

L17 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2002 ACS
1983:591664 Document No. 99:191664 ***Peroxidases*** from Phaeophyceae. II. Analytical disc electrophoresis and isoelectric focusing of ***peroxidases*** from Phaeophyceae. Vilter, H.; Glombitza, K. W. (Inst. Pharm. Biol., Univ. Bonn, Bonn, D-5300, Fed. Rep. Ger.). Bot. Mar., 26(7), 341-4 (English) 1983. CODEN: BOTNA7. ISSN: 0006-8055.
AB ***Peroxidase*** -contg. exts. of 6 Fucales and 5 Laminariales were examd. by discontinuous electrophoresis on polyacrylamide gels. Certain correlations in the pattern of the ***peroxidases*** from the Fucales were shown. The Laminariales differ completely from the Fuacles. Furthermore, the various Laminariales each have their own unique pattern. It was not possible to obtain isoelec. focusing in polyacrylamide gels without urea. In the presence of urea, the ***peroxidases*** of the Laminariales were unstable, whereas it was possible to identify bands showing enzyme activity in the region of pH 4.1-4.5 in the ***peroxidases*** of the Fucales.

L17 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2002 ACS
1983:591663 Document No. 99:191663 ***Peroxidases*** from Phaeophyceae. I. Extraction and detection of the ***peroxidases*** . Vilter, H.; Glombitza, K. W.; Grawe, A. (Inst. Pharm. Biol., Univ. Bonn, Bonn, 5300, Fed. Rep. Ger.). Bot. Mar., 26(7), 331-9 (English) 1983. CODEN: BOTNA7. ISSN: 0006-8055.
AB Using a newly developed method of extg. ***peroxidases*** from Phaeophyceae, samples of 33 different species originating from the Atlantic coast in Brittany were examd. On the basis of the H2O2-dependent oxidn. of I-, considerable differences were obsd. in the amt. of ***peroxidase*** activity in the various exts. Season and habitat had an effect on the results. ***Peroxidase*** activity in the crude exts. was also detectable with other typical ***peroxidase*** substrates, such as o-dianisidine. Moreover, these reactions were I-dependent. The effect of pH on ***peroxidase*** activity in Ascophyllum nodosum was examd. by observing the oxidn. of I and the I--dependent oxidn. of o-dianisidine. Differences arising with both methods of detection can be attributed to nonenzymic secondary reactions.

L17 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2002 ACS
1982:117975 Document No. 96:117975 A novel and comprehensive approach to the extraction of enzymes from brown algae, and their separation by polyacrylamide gel electrophoresis. Marsden, W. J. N.; Callow, J. A.; Evans, L. V. (Dep. Plant Sci., Univ. Leeds, Leeds, LS2 9JT, UK). Mar. Biol. Lett., 2(6), 353-62 (English) 1981. CODEN: MBLED7. ISSN: 0165-859X.
AB Low enzyme activities in brown algal exts. caused by low mol. wt. inhibitory phlorotannins, neg. charged inhibitory polysaccharides, such as alginic acid, and low cellular protein concns. were overcome by the use of a complex extn. medium contg. nonionic detergent (Tween 80), phenol-complexing agents, antioxidants, chelating agents, Ca2+, and protein stabilizers, using malate dehydrogenase (NAD-dependent) from ***Fucus*** serratus as an indicator of enzyme activity. Sepn. of various isoenzymes from the crude ext. by polyacrylamide gel electrophoresis is reported for the 1st time in brown algae, and is dependent upon the removal of viscous acidic polysaccharides from the crude ext., by a rapid and novel method involving ion-exchange chromatog. on small DEAE-cellulose columns.

L17 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2002 ACS
1976:539133 Document No. 85:139133 Inhibition of ***peroxidase*** by algal humic and fulvic acids. Pereira, J. R.; Mendez, J. (CSIC, Santiago de Compostela, Spain). Biol. Plant., 18(3), 179-82 (English) 1976. CODEN: BPABAJ.
AB In contrast to their soil counterparts, algal fulvic acids were more inhibitory than the corresponding humic acids. Fulvic and humic acids from ***Fucus*** vesiculosus were more efficient than the corresponding Laminaria digitata acids in inactivating the enzyme. Laminaria humic acids, which have no phenolic hydroxyls, showed a concn.-dependent inhibition hardly in accordance with the presumed role

played by these groups in the activity of oxidases.

L17 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2002 ACS
1972:150671 Document No. 76:150671 Immunocytochemical localization of the extracellular polysaccharide alginic acid in the brown seaweed, ***Fucus*** distichus. Vreeland, Valerie (Dep. Biol. Sci., Stanford Univ., Stanford, Calif., USA). J. Histochem. Cytochem., 20(5), 358-67 (English) 1972. CODEN: JHCYAS.
AB Fluorescent and ***peroxidase*** -labeled antibody techniques were employed to localize alginate, which is one component in the complex extracellular acidic polysaccharide found in F. distichus. The alginate antigen was extd. and characterized. It had a low degree of polymn. and a mannuronic acid to guluronic acid ratio of 2.2. No contaminants were detected. The specificity of rabbit antisera was tested by immunodiffusion. Antisera reacted with alginate and fractions of alginate but not with other brown algal polysaccharides. When cryostat sections of ***Fucus*** proved unsuitable, 1-.mu. sections embedded in glycol methacrylate were used for indirect fluorescent or ***peroxidase*** anti-body staining. Highly sulfated extracellular polysaccharides and intracellular phenolic compds. were implicated in nonspecific staining. Texture artifacts were caused by soly. of alginates and other polysaccharides from embedded sections. Alginate was localized in variable patterns in all cell walls and some matrix regions. The applicability of the methods is discussed.

L17 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2002 ACS
1970:453005 Document No. 73:53005 Localization of a cell wall polysaccharide in a brown alga with labeled antibody. Vreeland, Valerie (Dep. of Biol. Sci., Stanford Univ., Stanford, Calif., USA). J. Histochem. Cytochem., 18(5), 371-3 (English) 1970. CODEN: JHCYAS.
AB A fluorescent antibody and ***peroxidase*** -labeled antibody method is described for the localization of an alginate (I) fraction in cell walls and the matrix of ***Fucus*** distichus. I appeared throughout the medullary matrix in younger regions of the thallus. In older stem tissue with the epidermis worn away, I was not found. The pattern of I distribution in walls of young and mature oogonial mother cells suggested that a layer of I was laid down early in the development of the cell. This may be followed by apposition of a layer essentially free of I as the cell enlarged.

L17 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2002 ACS
1970:432272 Document No. 73:32272 Anomalous substrate specificities among the algal ***peroxidases*** . Siegel, B. Z.; Siegel, S. M. (Dep. of Microbiol., Univ. of Hawaii, Honolulu, Hawaii, USA). Amer. J. Bot., 57(3), 285-7 (English) 1970. CODEN: AJBOAA.
AB Semipurified tissue prepns. from 13 red and brown algae oxidized pyrogallol and p-coumaric acid but could not oxidize guaiacol and some other methoxy-substituted phenols, including common lignin precursors such as coniferaldehyde. They also failed to oxidize the aromatic amine, benzidine. In contrast, prepns. from green algae were like horseradish ***peroxidase*** and vascular plant prepns. in their ability to oxidize unsubstituted phenols, those substituted at one or both ortho-positions, and benzidine. One brown alga, Postelsia, was also unable to oxidize the common ***peroxidase*** substrates, iodide and eugenol. These results suggest a phylogenetic limitation on the potential for lignification based upon enzyme stereospecificity.

L17 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2002 ACS
1967:479717 Document No. 67:79717 Occurrence and metabolism of auxin in multicellular algae of the Baltic Sea. III. Metabolism of indole-3-acetonitrile and of indole-3-acetic acid. Schiewer, Ulrich; Krienke, H.; Libbert, Eike (Univ. Rostock, Rostock, Ger.). Planta, 76(1), 52-64 (German) 1967. CODEN: PLANAB.
AB cf. CA 67: 51116h. The green algae, Entero-morpha compressa and Cladophora rupestris, and the red algae, Ceramium rubrum, Furcellaria fastigiata, and Nemalion multifidum, could hydrolyze indole-3-acetonitrile (I) to indole-3-acetic acid (II); indole-3-acetamide (III), detected together with II, seemed to be an intermediate. The brown algae, ***Fucus*** vesiculosus, Pylaiella litoralis, and Halidrys siliquosa, could produce neither II nor III from I. All of the algae tested oxidized I to indole-3-carboxaldehyde (IV) and indole-3-carboxylic acid (V). II

was destroyed by living algae, mainly due to the activity of marine microorganisms. Sterile algae showed low activity, but seawater previously incubated with unsterile algae was active. IV and V plus some unidentified substances were products of II destruction. In vivo, the green algae, Chara foetida and E. intestinalis, the brown alga, ***Fucus*** vesiculosus, the red algae, Ceramium rubrum and Furcellaria fastigiata, had ***peroxidase*** activity; only the green algae, Chara foetida, E. intestinalis, E. compressa, and E. prolifera, possessed II oxidase activity in the presence of 2,4-dichlorophenol and Mn2+; the brown algae, ***Fucus*** vesiculosus and Chorda filum, and Furcellaria fastigiata, possessed natural inhibitors of II oxidase. 30 references.

L17 ANSWER 17 OF 17 CAPLUS COPYRIGHT 2002 ACS
1947:32778 Document No. 41:32778 Original Reference No. 41:6586i,6587a-i,6588a-f The nature of the ***peroxidase*** reaction of algae. Ronnerstrand, Sigfrid (Univ. Lund, Swed.). Kgl. Fysiograf. Sallskap. Lund, Forh., 16, 117-30 (German) 1946.
AB cf. Garc.acte.ia-Blanco and Grisol.acte.ia, C.A. 40, 6524.1. The object of the work was to differentiate between true ***peroxidases*** (I) and pseudoperoxidases (II) such as cytochrome and other hematins (cf. Keilin, C.A. 23, 3719) in plants. In earlier work (cf. C.A. 38, 2363.3), R. reported I present in 94% of the species of algae (seaweed) investigated. In detns. with pyrogallol, the reaction was strongest with 0.3% of H2O2 (III). With a satd. soln. of o-tolidine in 95% alc. (IV), the reaction (blue color) was strongest with 0.75% III. However, various investigators have found that the strongest reaction of purified I occurs at much lower concns. of III. This indicates that the ***peroxidase*** reaction of algae previously reported by R. was caused by II. To differentiate I from II, 3 cc. of aq. exts. of various algae was placed in a series of tubes, with 2 cc. of IV, 4 cc. of pH 5 buffer (optimum pH for production of blue color), and several cc. of III to obtain a series of approx. 3-fold dilns. of III from 3% down to 0.00003%. With exts. of Enteromorpha intestinalis there was a strong reaction with 1% III (weaker at 3% and 0.3%) showing the presence of II. With lower concns. of III, the reaction was strongest with 0.0003% III, showing that I was also present. This method demonstrated the presence of I (accompanied by II) in exts. of Ulva lactuca, Cladophora rupestris, Enteromorpha linza, and Rhodomela subfusca. In other cases, I could not be demonstrated or else it reacted at higher concns. of III than 0.0003%, owing to the presence of large amts. of reducing substances (V), especially ascorbic acid (cf. C.A. 38, 2363.3), which reduced the III and either weakened or completely prevented the reaction. The V content of the exts. varied with the method of extn., and was slowly diminished (by oxidation) upon standing; this makes the I content of the same material appear to be different. When algae were extd. several times with 50% alc. or satd. (NH4)2SO4 to remove V, later aq. exts. gave only weak tests for I (which had apparently been irreversibly pptd. in the cells). To obtain results which were more nearly correct, finely divided algae were treated with a single concn. of III to oxidize V, then the regular test was applied. A better method was to kill the algae with 20% alc., then repeatedly treat them in a series of tubes with the same amt. of III (3% to 0.00003%) which was later used in the test. After oxidation of V, I (when present) always gave a max. blue color with IV at a 0.0003% concn. of III, while II gave a max. reaction with 1% III. This method was too time-consuming for regular use. Tests with finely divided algae and exts. showed that I and II were both thermolabile, only 5-10% remained after boiling. E. intestinalis was used to test for I in presence of II and, Laminaria digitata to test for II (with purpurogallin and 0.7% III, at pH 5.8) both in presence of KCN. With an ext. of L. digitata, the activity of II (in percentage of the control without KCN) was: 0.0001 M KCN, 96%; 0.001 M KCN, 62%; 0.01 M KCN, 15%. This showed that II was relatively insensitive to KCN. The purpurogallin test on E. intestinalis with 0.0001 M KCN showed 84% activity with 0.7% III and 10% activity with 0.0003% III. This showed that KCN would give at least partial differentiation between I and II. The final method was to kill the algae with 20% alc., then divide them into 2 portions which were treated several times with 0.7% and 0.0003% III, resp., to oxidize V. Each portion was then divided into 2 sub-portions, which were treated with the reagent and the same percentage of III as previously, with and without 0.0001 M KCN. If the reaction was weakened by KCN with 0.0003/% III, I was considered to be present. If II was present, the KCN did not weaken the reaction with 0.7% III. Green

algae contg. both I and II were E. intestinalis, E. linza, Ulva lactuca, and Cladophora rupestris; red algae were Porphyra umbilicalis, Nemalion multifidum, Rhodomela subfusca, Polysiphonia nigrescens, and Chondrus crispus. Brown algae contg. only II were Elachista fucicola, Spermatochnus paradoxus, Stilophora rhizodes, Sphacelaria bipinnata, Chorda filum, L. digitata, ***Fucus*** vesiculosus, F. serratus, Ascopthyllum nodosum, and Halidrys siliquosa; red algae were Furcellaria fastigiata, Brongniartella byssoides, Ceramium rubrum, Ahnfeltia plicata, Lomentaria clavellosa, and Cystoclonium purpurascens. Algae contg. neither I nor II were: Chordaria flagelliformis, Mesogloia vermiculata, Dictyosiphon foeniculaceus (brown algae), and Laurencia pinnatifada (a red alga). Therefore I was found only in 9 of 29 species, and in no brown algae. Small amts. of I may have been missed in some cases, but the results indicate that I is less common in algae than previously supposed. It is often assumed that II are heatstable. Therefore algae were boiled in water for 1 min., and tested (with IV) for II, against unboiled controls. The II of the following algae had but little thermostability: E. intestinalis, E. linza, U. lactuca, C. rupestris, and C. sericea (green algae); P. umbilicalis, R. subfusca, P. nigrescens, B. byssoides, C. crispus, A. plicata, and C. purpurascens (red algae); E. fucicola, S. rhizodes, C. filum, L. digitata, F. vesiculosus, F. serratus, A. nodosum, and H. siliquosa (brown algae). The II of N. multifidum and C. rubrum were little affected by boiling for 5 min. Two exts. of algae were tested for II in the presence of 0.01 M KCN, with C. rubrum (with IV) about 10% of the activity remained; with L. digitata (purpurogallin method) 16% of the activity remained. In presence of 0.01 M NaF, activity was approx. 87% with both species. (NH4)2SO4 (30 g. per 100 cc.) was added to exts. of both species. Upon standing overnight, the proteins (and the pigments of C. rubrum) pptd. To det. the sensitivity of II to acid, the solns. were made to pH 1.7. After 15 min. they were adjusted to pH 5.2. The acidification did not decrease the activity of the II of C. rubrum; with L. digitata II activity diminished to 52% of the original value. The pigment-free ext. of C. rubrum, treated with pyridine and Na hydrosulfite, showed the 550 .mu. band of cytochrome c. Other bands were not observed. The II activity in C. rubrum is probably not caused by the small amt. of cytochrome, particularly since the latter is insensitive to KCN. Conclusions: Although some plants contain true I, most reports of I in plants are caused by the presence of II. In algae (seaweed) II is more common than I. There are [at least] 2 sorts of II in algae, those found in C. rubrum and N. multifidum, and those found in other species. With the 2 former species, the II is relatively insensitive to KCN. In addn., the II of C. rubrum is resistant to acid and boiling. The II of L. digitata resembles a true enzyme more closely. The II reported in many algae by Tamiya (C.A. 29, 2203.2) was insol. in water and sol. in abs. AcOH, and therefore differs from the II of C. rubrum. 20 references.

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=> E VREELAND V/AU
=> S E3-E6
             4 "VREELAND V"/AU
             1 "VREELAND V J"/AU
            20 "VREELAND VALERIE"/AU
             1 "VREELAND VALERIE J"/AU
L18         26 ("VREELAND V"/AU OR "VREELAND V J"/AU OR "VREELAND VALERIE"/AU
               OR "VREELAND VALERIE J"/AU)

=> E NG K/AU
=> S E3,E16
            45 "NG K"/AU
            13 "NG K L"/AU
L19         58 ("NG K"/AU OR "NG K L"/AU)

=> E NG KWAN/AU
=> S E3,E6,E7
             2 "NG KWAN"/AU
             1 "NG KWAN L"/AU
             1 "NG KWAN LAM"/AU
L20          4 ("NG KWAN"/AU OR "NG KWAN L"/AU OR "NG KWAN LAM"/AU)

=> S L18,L19,L20
L21         87 (L18 OR L19 OR L20)
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=> S L21 AND L15
L22             3 L21 AND L15

=> S L22 NOT (L8,L17)
L23             0 L22 NOT ((L8 OR L17))
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	L #	Hits	Search Text	DBs
1	L1	36830	vanadium haloperoxidase	USPAT ; US-PG PUB
2	L2	123	fucus	USPAT ; US-PG PUB
3	L3	9	L1 AND L2	USPAT ; US-PG PUB